

REMARKS

Claims 1-3, 7 and 12 have been amended to correct informalities and/or more clearly define the subject matter which Applicants regard as the invention. No new matter has been added. Upon entry of this Amendment, which is respectfully requested, Claims 1-12 will be pending.

Response to Claim Objections

Claims 1, 3 and 12 were objected to because of informalities.

Claims 1, 3 and 12 have been amended to correct the informalities. Accordingly, withdrawal of the objections is respectfully requested.

Response to Claim Rejections Under § 112

Claims 1-12 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite and/or lacking antecedent basis.

Claims 1-3, 7 and 12 have been amended to correct antecedent basis and/or to more clearly define the subject matter which Applicants regard as the invention. Accordingly, withdrawal of the rejection is respectfully requested.

Response to Claim Rejections Under § 102

Claims 1-12 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 6,091,185 to Matsubara. Applicants respectfully traverse.

Present Claim 1 recites, *inter alia*, the tubular insulator and the metallic shell, when observed in a section made by a plane including the axis of the spark plug, have therebetween a gap of less than 0.45 mm at a more front end side of the tubular insulator than an engagement position of the packing and the first insulator stepped portion; and the gap between the tubular insulator and the metallic shell is provided axially from a most front end side engagement

position of the packing and the first insulator stepped portion as a starting point to a finishing point that is apart from the starting point by 1.2 mm or more toward the front end side of the metallic shell while being apart from the front end surface of the metallic shell by 7.9 mm or more toward a rear end side of the tubular insulator.

In other words, the gap between the tubular insulator and the metallic shell is less than 0.45 mm at a more front end side of the metallic shell than an engagement position of the packing and the first insulator stepped portion. The gap is gradually obtained over a length A of 1.2 mm in a direction toward the front end surface of the metallic shell 60. Further, the endpoint of length A is 7.9 mm or more away from the front end surface of the metallic shell 60.

When the length A is less than 1.2 mm, it is difficult for the heat radiated from the insulator intermediate portion 28 to be transmitted sufficiently to the inner surface of the metallic shell. Further, positioning the gap 7.9 mm or more from the end surface of the metallic shell 60 hinders spark discharges between the metallic shell and the tubular insulator. *See*, paragraph [0045].

Matsubara discloses a semi-creeping discharge type spark plug having a cylindrical metal shell, an inner wall of which has a rear section and a front section to respectively serve as a diameter-increased section and a diameter-decreased section with a seat portion as a boundary therebetween. Matsubara further discloses an insulator placed within the metal shell fixed so that the front end surface of the insulator extends beyond the front end surface of the metal shell with a shoulder portion of an insulator nose engaged against the seat portion of the metal shell by way of a packing. In other words, Matsubara discloses a spark plug wherein the insulator gradually tapers toward the front section of the metal shell. Matsubara fails to disclose or suggest the relationship between the gap and the length over which it is obtained. In addition,

Matsubara fails to disclose or suggest maintaining the gap at a specific distance from the front end surface of the electrode. Thus, Matsubara fails to anticipate or render obvious the present claims. Accordingly, withdrawal of the rejection is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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